IN *Physis, Revista de la Sociedad Argentina de Ciencias naturales* (No. 11, tome ii.), an account is given by Ana Manganaro of cleistogamic flowers in *Ranunculus hilairei, Cardamine chenopodifolia,* and *Trifolium argentinense.* The article is illustrated by photographs of the plants showing the cleistogamic, or self-fertilised, flowers, and the way in which they bury themselves in the ground. In the Ranunculus these small flowers are produced in the axils of the outer radical leaves, and the flower stalks bend over and lengthen, carrying the developing fruits underground. In the Cardamine the contrast between the normal flowers borne on long inflorescences and the small abnormal flowers borne in the axils of the leaves of the basal rosette is very striking. In the Trifolium the abnormal heads contain some five to eight flowers, whilst the normal ones contain as many as thirty.

M. DE MONTESSUS DE BALLORE, the director of the Chilean Seismological Service, recommends that scales of seismic intensity should be abandoned (Bull. Seis. Soc. America, vol. vi., 1916, pp. 227–31). The suggestion, if carried out, would involve the disappearance of isoseismal lines from our earthquake maps. He would retain only the following lines:—The curve which bounds the disturbed area, and those which surround the places of greatest intensity and the area of damage. The last-mentioned curve would be fairly definite, but the first would be illusive, for the perception of a shock depends on certain accidental conditions. An earthquake which occurs on a Sunday afternoon, for instance, will be felt over twice the area of one in the middle of a weekday.

IT is commonly taught by the agricultural chemist that one of the many useful effects of an application of lime to the soil is the bringing into solution of a portion of the potash contained in the soil. The present lack of potash manures has, indeed, caused stress to be laid upon the increased use of lime or calcium sulphate as one means of drawing more rapidly upon the potash reserves of the soil. The assertion seems, however, to rest upon a very slender basis of evidence, and, as regards a certain type of soil, is directly challenged by Messrs. L. J. Briggs and J. F. Breazeale in the *Journal of Agricultural Research,* vol. viii., No. 1 (January, 1917). In experiments with orthoclase and pegmatite, and also with soils of granitic type, they failed to detect any increase of the solubility of the potassium on treatment with various proportions of calcium hydroxide or sulphate. In the case of orthoclase and of one of the soils, the presence of calcium sulphate in solution actually depressed the solubility of the potassium, the quantity of the latter in solution decreasing progressively as the concentration of the calcium sulphate increased. These results were fully borne out by the amounts of potash taken up by wheat seedlings grown in the respective solutions. The experiments thus indicate that the availability to plants of the potash in soils derived from orthoclase-bearing rocks is not likely to be increased by the application of lime or gypsum.

AN interesting article on "The Training of an Analyst" is contributed to the *Chemical News* for January 26 by Mr. Frank Browne, who was formerly Government analyst at Hong Kong. Mr. Browne ventures to assert that a chemical student may leave college with a good degree and yet know little of the practical side of the analytical profession. Such a student, going directly into a works laboratory or that of a public analyst, will probably in the course of time acquire sufficient experience to become very useful so long as his scope is limited to routine analyses. But, given a sample of unusual kind for analysis, he may be found wanting on account of lack of training in good, rapid analytical methods. The training of an analyst should be such that from a work of reference he can devise an analytical method for any strange sample and apply it successfully without interfering overmuch with his routine duties. Emphasis is laid on the fact that, by careful study, nearly any system of analysis can be shortened to a remarkable degree, and some methods of doing this are indicated. The author strongly supports Mr. A. Chaston Chapman's recommendation that to the curriculum of chemical students who intend to become professional chemists a year should be added in which they would be trained under conditions resembling those of a technical rather than those of an academic laboratory. He suggests that the programme for the year should include analyses of water, fuel, oils, fats, and waxes, alcoholic liquids, metals and alloys, whilst a good working knowledge of the microscope, polarimeter, refractometer, and spectroscope should be acquired. It is also desirable that the student should have a sound knowledge of the British system of weights and measures.

WE are asked to say that the work of Prof. Percy Groom upon the Indo-Malayan Yang wood (Dipterocarpus sp.), referred to on p. 450 of NATURE for February 8, was carried out at the Imperial College of Science and Technology, and not at the Imperial Institute as stated in the article.

THE spring list of announcements of the Oxford University Press (Mr. Humphrey Milford) includes: "Three Lectures on Experimental Embryology," the late Capt. J. W. Jenkinson, with a short biographical notice of the writer by Dr. R. R. Marett; "The Beginnings of English Overseas Enterprise," Sir Charles P. Lucas, with notes, references, and an appendix of the First Charter to the Merchant Adventurers; "Sir Walter Raleigh: Selections from his 'History of the World,' Letters, and other Writings," edited, with introduction and notes, by G. E. Hadow, with maps, a portrait, and a facsimile of his handwriting; "The Casting Counter and the Counting-Board: A Chapter in the History of Numismatics and Early Arithmetic," F. P. Barnard, illustrated; "Education To-day and To-morrow," P. Matheson; "The Origin and Meaning of Some Fundamental Earth Structures," C. F. Berkey; "Milk Production Cost Accounts: Principles and Methods"; "Aristotle: Meteorology," edited by F. H. Fobes; "The Order of Nature," L. J. Henderson; "An Adequate Diet," P. G. Styles; "Calculus of Variations," W. E. Byerly; "Organism and Environment," J. S. Halldane.

OUR ASTRONOMICAL COLUMN.

A GREAT SUN-SPOT.—A group of spots large enough to be seen with the naked eye has been visible on the sun during the past week. A writer in the *Times* of February 9 describes it as one of the largest groups ever photographed at Greenwich, and gives the heliographic co-ordinates as long. 10°, lat. 15° south. It is further stated that the disturbed area was 125,000 miles long and 64,000 miles broad, and consisted of two very large spots connected by a group of small ones. The diameter of the preceding spot was 35,000 miles, that of its umbra being 13,000 miles. The following spot was larger, with several umbræ. The spot passed the central meridian on February 9 and will remain visible until February 15, when it will be near the west limb.

Prof. Fowler informs us that on February 7 observations with the spectroscope indicated great activity, especially among the smaller connecting spots; in this region many brilliant reversals of the Hα line were noted.

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Parallaxes of Procyon and Altair.—Among the large number of stellar parallaxes recently determined by photographic methods at the Leander McCormick Observatory, Dr. S. A. Mitchell has directed special attention to the results for Procyon and Altair (*Pop. Ast*, vol. xxv., p. 38). For Procyon, the values which have been previously determined are remarkably consistent, ranging from 0·287″ to 0·34″, and Dr. Mitchell's parallax of 0·309″ ± 0·007″ is in perfect agreement with the mean of all. The parallax arrived at for Altair is 0·218″ ± 0·007″, and this again accords very closely with the weighted mean value 0·220″ derived from earlier determinations.

Densities of Visual Binary Stars.—An interesting attempt to advance our knowledge of the densities of stars of different classes has been made by E. Öpik, of Moscow, in a discussion of the probable densities of visual binaries for which orbits have been calculated (*Astrophysical Journal*, xliv., p. 292). He proceeds by developing a series of formulæ by which the density can be determined when the surface brightnesses of the components are known. The surface brightness itself is determined from the spectral type, in conjunction with the corresponding effective temperatures given by Wilsing and Scheiner, and an application of the radiation formula of Planck. The mass-ratio of the two components must also be known, and where such data are not available, approximate values are estimated from the differences in magnitude. The densities calculated in this way for forty pairs cover a wide range (0·012 to 5·9, in terms of the sun), but a considerable proportion of them approach the density of the sun. The mean values for the different spectral classes, which are only to be regarded as roughly approximate, are as follows:—

Spectral type	No. of stars	Density
A 0–A 5	9	0·65
F 0–F 8	19	0·59
G	7	0·23
K, K 5	5	0·072

So far as they go, though the author does not comment upon this point, the figures show an order of density opposite to that which would be expected on the supposition that celestial evolution is along a line of descending temperature only. When accurate magnitudes and spectral types (or colour-indices) become available for each component, it will be possible to obtain separately the densities of the components, and an important region of stellar statistics will be opened up.

EXPERIMENTS ON ASCARIS INFECTION IN HONG KONG.

AN important paper by Capt. F. H. Stewart, Indian Medical Service, appeared in the *British Medical Journal* for July 1, giving the life-history of *Ascaris lumbricoides*, which is extremely common both in man and the pig at Hong Kong, where the author is stationed with the 74th Punjabis. In this preliminary communication he showed that the parasite presents an alternation of hosts. Thus, when ripe eggs reach the alimentary canal of the rat or mouse the larvæ are liberated, and six days after infection they are found in the blood-vessels of the lungs and liver, and the host is seriously ill with pneumonia. They next pass from the blood-vessels into the air-vesicles of the lung, causing hæmorrhage into them. On the tenth day they occur only in the vesicles and in the bronchi. If the disease does not prove fatal, the host recovers on the eleventh or twelfth day, whilst on the sixteenth day it is free from parasites. The affected animals could readily contaminate by the nose or mouth the food of man or the dust and earth of his surroundings.

Capt. Stewart has continued his experiments since the foregoing date both with *A. lumbricoides* and *A. suilla*, and finds that the larvæ appear in the bronchi, trachea, and mouth of the rat and mouse on the night of the seventh day and during the eighth day after infection by the mouth, and he believes that they pass by means of the saliva on to the food which is being nibbled by the rodents. It is possible that one attack of Ascariasis in rats renders them immune against subsequent attacks, but further confirmation is necessary. He found that the larvæ survived longest (twenty-four hours) in blood on moist bread. In water, normal salt-solution, and in mouse's blood they survived three hours.

Out of five experiments to test the infection of pigs from the foregoing rodents, three gave positive results, two negative. In estimating the value of the negative experiments the very high mortality among the parasites employed under somewhat unnatural conditions must be kept in mind. Capt. Stewart endeavoured to obtain an estimate of this mortality by comparing the number of ripe eggs given to a mouse with the number of larvæ found in the lung. An average dose contained about 5000 eggs, whilst the number of larvæ found in the lungs did not exceed fifty. The transfer from the rodent to the pig is probably the most vulnerable part of the life-cycle, since the larva is a very delicate organism. The author also carried out control experiments with the pig.

Lastly, Capt. Stewart carried out some experiments which demonstrated that *A. marginata* of the dog has also its intermediate host in the mouse.

He concludes by stating that if ripe eggs of *A. lumbricoides* are swallowed by rats or mice they hatch. The larvæ bore into the venules of the portal system or ascend the bile-duct. They are found in the dilated capillaries of the liver between the second and the fifth days. As their diameter is three times that of a blood-corpuscle in the mouse, they cannot pass through a normal capillary. The liver-cells in the neighbourhood of the larvæ undergo rapid degeneration, and the larvæ are thus enabled to pass by the hepatic vein and vena cava to the heart, and by the pulmonary artery to the lungs, where they are filtered off at the entrance to the capillary field. Embolism of the arterioles takes place, and the larvæ pass with the effused blood into the air-vesicles on the sixth day. They are found in the bronchi on the seventh day, and in the trachea and mouth on the eighth day, after infection. The larvæ from the lungs of rodents can infect the pig, and it is probable that in Nature infection of both man and the pig takes place by food contaminated by rats and mice. W. C. M.

SEX-LIMITED FACTORS IN HEREDITY.

FEW of the results obtained in recent years by students of heredity on Mendelian lines have appealed to biologists as a whole more forcibly than such cases of "sex-limited" inheritance as are exemplified by colour-blindness in mankind or the special type of wing-marking in the magpie-moth (*Abraxas grossulariata*) described by Dr. Leonard Doncaster in his work on the "Determination of Sex." Those who have followed the progress of research on the subject during the last five years recognise how important have been the results obtained by Prof. T. H. Morgan and his colleagues in their studies of inheritance in fruit-flies of the genus Drosophila.

An admirable summary of these studies, entitled

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